CLAIMS

1. An absorption refrigerating machine comprising:

a regenerator for generating refrigerant vapor and concentrating a solution;

a condenser for condensing the generated refrigerant vapor;

an evaporator for evaporating the condensed refrigerant;

an absorber for absorbing the evaporated refrigerant vapor into the solution;

an auxiliary regenerator for heating the concentrated solution from the regenerator, generating the refrigerant vapor and further concentrating the solution;

an auxiliary absorber for absorbing the refrigerant vapor generated in the auxiliary regenerator while cooling a diluted solution from the absorber;

a low-temperature heat exchanger for performing heat exchange between the concentrated solution sent from the auxiliary regenerator to the absorber and the diluted solution sent from the auxiliary absorber to the regenerator;

a high-temperature heat exchanger for heating the diluted solution leaving the low-temperature heat exchanger and sent to the regenerator with the concentrated solution sent from the regenerator to the auxiliary regenerator.

2. An absorption refrigerating machine comprising:

a regenerator for generating refrigerant vapor and concentrating a solution;

a condenser for condensing the generated refrigerant vapor;

an evaporator for evaporating the condensed refrigerant;

an absorber for absorbing the evaporated refrigerant vapor into the solution and;

an auxiliary regenerator for heating the concentrated solution from the

regenerator, generating the refrigerant vapor and further concentrating the solution;

an auxiliary absorber for absorbing the refrigerant vapor generated in the auxiliary regenerator while cooling a diluted solution from the absorber,

wherein a heat transfer area of the auxiliary regenerator is equal to or smaller than one-third of a heat transfer area of the regenerator, and a heat transfer area of the auxiliary absorber is equal to or smaller than two-thirds of a heat transfer area of the absorber.

3. An absorption refrigerating machine comprising:

a regenerator for generating refrigerant vapor and concentrating a solution;

a condenser for condensing the generated refrigerant vapor;

an evaporator for evaporating the condensed refrigerant;

an absorber for absorbing the evaporated refrigerant vapor into the solution;

an auxiliary regenerator for heating the concentrated solution from the regenerator, generating the refrigerant vapor and further concentrating the solution;

an auxiliary absorber for absorbing the refrigerant vapor generated in the auxiliary regenerator while cooling a diluted solution from the absorber;

a circulating path for allowing the solution to reach the absorber in sequence from the absorber, the auxiliary absorber, the regenerator, and the auxiliary regenerator; and

at least one of means for controlling heat transfer performance of the auxiliary regenerator and means for controlling heat transfer performance of the auxiliary absorber.

4. The absorption refrigerating machine according to Claim 3, wherein the means for controlling the heat transfer performance of the auxiliary

regenerator is a hot water flow rate control valve for controlling the flow rate of hot water bypassing and/or passing through the auxiliary regenerator, or a solution flow rate control valve for controlling the flow rate of solution bypassing and/or passing through a heat transfer section of the auxiliary regenerator.

5. The absorption refrigerating machine according to Claim 3 or Claim 4 , wherein the means for controlling the heat transfer performance of the auxiliary absorber is a cooling water flow rate control valve for controlling the flow rate of cooling water bypassing and/or passing through the auxiliary absorber, or a solution flow rate control valve for controlling the flow rate of solution bypassing and/or passing through a heat transfer section of the auxiliary absorber.

6. The absorption refrigerating machine according to any one of Claim 3 through Claim 5, wherein at least one of the means for controlling the heat transfer performance of the auxiliary regenerator and the means for controlling the heat transfer performance of the auxiliary absorber includes a control mechanism for making control based on the temperature of hot water functioning as a heat source or the temperature of the solution in the regenerator.

7. The absorption refrigerating machine according to any one of Claim 1 through] Claim 6, wherein the absorber is subdivided into a low-pressure absorber and a high-pressure absorber, the evaporator is subdivided into a low-pressure evaporator and a high-pressure evaporator, the cold water is first of all supplied to the high-pressure evaporator, the cooled cold water is next supplied to the low-pressure evaporator, the concentrated solution from the auxiliary regenerator is first of all supplied to the low-pressure absorber, the refrigerant vapor from the low-pressure evaporator is absorbed, the

solution, after absorbing the refrigerant vapor in the low-pressure absorber is supplied to the high-pressure absorber, the refrigerant vapor from the high-pressure evaporator is absorbed, and the diluted solution, after absorbing the refrigerant vapor, is supplied to the auxiliary absorber.

8. An absorption refrigerating machine comprising:

a regenerator for generating refrigerant vapor and concentrating a solution;

a condenser for condensing the generated refrigerant vapor;

an evaporator for evaporating the condensed refrigerant;

an absorber for absorbing the evaporated refrigerant vapor into the solution;

an auxiliary regenerator for heating the concentrated solution from the regenerator, generating the refrigerant vapor and further concentrating the solution;

an auxiliary absorber for absorbing the refrigerant vapor generated in the auxiliary regenerator while cooling the diluted solution, the auxiliary absorber being constructed to utilize as the diluted solution a portion of diluted solution mixture made up of the diluted solution of an absorber outlet and the diluted solution of an auxiliary absorber outlet;

a path for sending the remainder of the diluted solution mixture to the regenerator;

a low-temperature heat exchanger for heating the diluted solution mixture sequentially on the path with the concentrated solution supplied from the auxiliary regenerator to the absorber; and

a high-temperature heat exchanger for heating the diluted solution mixture leaving from the low-temperature heat exchanger and sent to the regenerator with the concentrated solution supplied from the regenerator to the auxiliary regenerator.

9. The absorption refrigerating machine according to Claim 8, wherein the absorber is subdivided into a low-pressure absorber and a high-pressure absorber, the evaporator is subdivided into a low-pressure evaporator and a high-pressure evaporator, the cold water is first of all supplied to the high-pressure evaporator, the cooled cold water is next supplied to the low-pressure evaporator, the concentrated solution from the regenerator is first of all supplied to the low-pressure absorber, the refrigerant vapor from the low-pressure evaporator is absorbed, the solution, after absorbing the refrigerant vapor in the low-pressure absorber is supplied to the high-pressure absorber, the refrigerant vapor from the high-pressure evaporator is absorbed, a portion of the diluted solution mixture of the diluted solution of the high-pressure absorber outlet absorbing the refrigerant vapor and the diluted solution of the auxiliary absorber outlet is supplied to the auxiliary absorber, and the remainder is sent to the regenerator.

10. The absorption refrigerating machine according to any one of Claim 1 through Claim 9, wherein the heat source substance for heating the solution is first of all supplied to the regenerator, and then supplied to the auxiliary regenerator.